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**INCREASING MILITARY PHYSICIAN PRODUCTIVITY
IN A MANAGED CARE ENVIRONMENT**

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In Partial Fulfillment of the
Requirements for the Degree
of
Master of Healthcare Administration
by
Captain Steven L. Lord, MS
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Physician Productivity

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ABSTRACT

Rising health care costs in an environment of increasingly scarce resources have stimulated the development of alternative systems for the delivery of health care. Recent Department of Defense (DOD) initiatives have been enacted to reduce health care costs for its Military Health Services System (MHSS). Hospital commanders and catchment area managers in the MHSS must, by law, provide necessary health services to eligible beneficiaries. While civilian health care organizations utilize monetary incentives as the primary method of stimulating increased physician productivity, military organizations must identify and implement nonmonetary incentives. The purpose of this study is to identify potential nonmonetary incentives and to determine their perceived relative value in stimulating increased productivity in military hospitals.

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Increasing Military Physician Productivity In a
Managed Care Environment

INTRODUCTION

Conditions Which Prompted the Study

The relation of resource inputs to work unit outputs (productivity) has long been a subject of management interest. Manufacturing and production line techniques have been studied extensively, with a focus on increasing productivity. Only recently, however, has the health care industry realized the need to increase the output of high quality services while simultaneously decreasing relative resource input. The Easterbrook Summary (1987) identifies health care costs as consuming 11.2% of the nation's Gross National Product (GNP), while the total National Defense Budget consumed less than 8% of the GNP. Insurers, employers, the government, and employees all feel the "squeeze" of rising costs. This factor has forced the nation to seek means of delivering health services more efficiently.

Increased demand for health services, accompanied by scarce resources and rising health care costs, has

caused the Department of Defense (DOD) to pursue alternative and innovative ways to deliver health services in the Military Health Services System. Lieutenant Colonel Christopher Pool (1990), in his address to the Assistant Secretary of Defense, Health Affairs, identified military health care inflation as increasing at a rate of 17%. Managed care initiatives in the DOD closely parallel those in the civilian environment. The productivity of military providers is a crucial variable in the success of DOD MHSS managed care initiatives. A perceived difference in the workload of military physicians versus that of their civilian counterparts working in similar conditions (staff model HMO), with similar patients, indicates that this management problem is one in need of further study and resolution. Incentives that the MHSS may offer its military physicians vary greatly from those available to civilian health care institutions. Monetary incentives are the most effective and most widely used by the civilian sector. Military pay, bonuses, and professional pay are limited to those authorized by Congress, and largely are beyond the

control of individual military treatment facility (MTF) commanders. Other perquisites that may serve as productivity incentives are available to the MTF commander, and are limited only by knowledge, innovation, and willingness. It is the effective application of these incentive mechanisms that offers the MTF commander the greatest opportunity and means to increase productivity.

Problem Statement

A significant increase in the demand for services, accompanied by rising health care costs, has forced military medical treatment facility commanders to seek means of increasing the productivity of their military physicians. This increased productivity must be stimulated by nonmonetary incentives under the control of the MTF commander. The advent of managed care initiatives in the Department of Defense has now placed the responsibility for resource management squarely on the shoulders of the MTF commander. This study seeks to compare relative reported workload of Army, Air Force, and civilian health care institutions, to identify possible nonmonetary incentives, and to

identify the relative perceived value of these incentives at Martin Army Community Hospital.

Literature Review

Productivity definitions and measurements.

The amount of output per unit of input is the most basic definition of productivity and simplifies the task of resource management. The fact is, however, that in the field of health care what constitutes a unit of input or a unit of output must first be defined before the ratio of one to the other can be quantified. This question of definitions is further complicated by the difficulty in measuring relative units. At this point, a review of definitions of productivity, output, input, and the methods of measurement is in order. How can we increase productivity without first defining the variables in the ratio? Even a basic comparison of productivity must begin by establishing a common measurement tool. These problems have long been the subject of available literature on productivity. Watters (1987) recognizes the difficulty in measuring a unit of health care, and states that there is no one single satisfactory way to define the product of

medical care. Health care systems exist to make people feel better, and there is an impact when the care is not available or delivered, but these concepts are not easily measured.

Ford (1987) points out some of the problems with previously used measures of productivity. He states that other output measures have failed by measuring only inpatient or outpatient visits, by measuring the process of patient care rather than output, and by mixing variables to develop a mongrel statistic. Ford further suggests the use of a measurement called the Composite Patient Encounter (CPE), which equates outpatient care to inpatient care by measuring the production costs associated with each. Thus, a unit of output would be a completed patient encounter, with all services rendered factored into the equation.

A series of productivity measures (intermediate) is suggested by Sherman (1984). He suggests the use of a technique called Data Envelopment Analysis (DEA), which is a linear programming model in which different types of services can be measured for productivity by explicitly comparing their use of multiple inputs

(resources) to produce multiple outputs (services). The DEA model allows us to obtain to a common denominator, or one single rating even though the services are dissimilar and the input units are not "weighted."

Serway (1987), in her article "Alternative Indicators for Measuring Hospital Productivity," suggests using a Full Time Equivalent per Adjusted Bed Days measure. This ratio takes into account labor in the form of personnel and hours, thus including the major components of a labor input, but not resource dollars.

Both direct and ancillary measures of productivity must be factored into a total organizational assessment, as pointed out by Griffin (1987). Griffin continues in his article with suggestions for how to measure these ancillary services as either cost or profit centers.

We must remember when comparing hospitals to each other that the acuity or case mix index may vary from hospital to hospital. A hospital producing the same amount of output as another, yet having a higher acuity

level has actually been more productive. Horn (1987) recognizes this discrepancy and states that the measure used by our Health Care Financing Agency, the Diagnostic Related Grouping, does not adequately account for the variation in case mix. Braun (1990) uses the Case Mix Index to modify workload figures for Army hospitals. Another severity rating scale is tested and found reliable by Wagner (1983). Wagner tests the Acute Physiology and Chronic Health Evaluation (APACHE) system of categorizing a severity of illness rating using the seven major organ systems of the body.

It is easily deduced from this review that there are many diverse views, definitions of productivity, and ways to measure it. Most measures, however, use either ratio analysis or regression analysis. The complexity of the measurement process is due to the diverse inputs and outputs involved in a unit of health care. The American Hospital Association attempts to quantify performance in their Monitrend report, which allows us to compare one hospital to another. Some of the measurements that Monitrend uses are total expenses

per patient day, payroll expenses per patient day, average cost per stay, average payroll costs per stay, full time equivalents per patient day, and average annual salary expense.

Methods to increase productivity.

Current periodical literature abounds with varied suggestions for improving productivity; however, only a collage of ideas is available. There has been no definitive text on productivity that has proven effective in the health services environment.

Eliminating barriers to productivity in the work environment is one suggestion for a starting point in a productivity enhancement program. Esty (1992) proposes an eight step model for creating a productive work environment. She sees the potential for productivity in unleashing the natural motivation of our employees, and her model is based on a change in corporate culture in order to make employees know that they are treasured assets. This change, accompanied with employee involvement, pertinent data, and management support and commitment, should catalyze the unleashing of employee motivation.

This theory of employee involvement in increasing productivity is a cornerstone of any program for productivity improvement. Landsborough (1985) proposes a similar program, which he entitles a Productivity Self Enhancement Process (PSEP). PSEP prescribes involvement and participation of employees from the bottom of the organization up. Landsborough recognizes that many health care employees lack the statistical and analytical skills to use data effectively. He urges management to provide this type of support, thereby freeing the employees to generate as many ideas as possible to catalyze the process.

In removing barriers to productivity in the work environment, a thorough analysis of the physical environment is crucial. Is the layout of the work space conducive to patient flow? An example of this fact is found in the Joint Healthcare Manpower Standards (JHMS). JHMS states that each optometrist should have two treatment rooms in order to be productive. Barber (1988) found this factor to be one reason that ten of thirteen Army health clinics at Moncrief Army Hospital were not meeting productivity

standards by a statistically significant margin. McCorquadale (1990) also criticizes the JHMS for not considering the differences in military hospital missions and patient acuity. Are information systems providing the necessary information for decision making without actually increasing the amount of man-hours needed to operate a clinic? Drucker (1991) found that many hospital automated information systems were actually increasing the amount of clerical support needed without the automated system. There are, however, technological advances that actually decrease clerical tasks. Advances in nurse call systems can result in increased nurse productivity through a reduction in nurse administrative duties. Jones (1987) demonstrates how improvements in telephonic systems can increase the productivity of patient appointment clerks.

An effective and efficient staffing ratio of physicians to support personnel is necessary to increase productivity. Schroeder (1987) recognizes this fact and states that organizations must ensure that the ancillary support system in place must be

capable of handling an increased workload associated with increased productivity. Hoare (1985) demonstrates how delegating non-nursing functions to clerical personnel can improve nursing efficiency and productivity, thereby freeing nursing time for more patient care. An appropriate staffing ratio can actually decrease costs while increasing output, as demonstrated by the comparison of obstetrics/gynecology clinic staffing and output at Martin Army Community Hospital and the Air Force Regional Hospital at Eglin Force Base, Florida (later in this text).

Much of the current literature on continuous quality improvement (CQI) espouses increased productivity as a natural byproduct of the CQI process. Riley (1992) demonstrates this concept in his statement that poor quality drives up costs. Other authors of the CQI concept, such as Donabedian, Crosby, and Juran, all agree that CQI involves doing the right thing right the first time, thereby eliminating costly rework. This concept is specifically linked to the military health care system by the Army consultant on CQI, Colonel Osvaldo Bustos.

Any program with a goal of increasing productivity in a health care organization must also focus on improving physician productivity. All of the suggestions already mentioned will not be effective without physician involvement. Freiman (1989) clearly demonstrates this fact by showing the link between successful utilization management and physician involvement. Greenfield (1989) identifies that the bond between the physician and patient has diminished, while the bond between the physician and the organization has increased. The whole text of the book "Doctor's Decisions and the Cost of Medical Care" is dedicated to this concept, and provides suggestions for changing physician behavior so that it will be in line with corporate objectives.

Purpose of the Study

The purpose of this study is to compare the actual workload of selected clinical services at Martin Army Community Hospital (MACH) to that of the United States Air Force Regional Hospital located at Eglin Air Force Base (EAFH). Additionally, these workloads are compared to workload standards of the Kaiser Permanente

Health Maintenance Organization located in Atlanta, Georgia. The study also quantifies the relative perceived value of nonmonetary incentives at Martin Army Community Hospital. The study provides suggestions for increasing productivity of military physicians in a managed care environment. In addition, the study should provide an indication of the validity of the Joint Healthcare Manpower Standards.

METHODS AND PROCEDURES

The crucial variables in this study are workload performed by military physicians, the desire to increase that performed workload (motivation), and the perceived value of nonmonetary incentives to stimulate motivation. The outpatient visit was chosen as the measure of workload performed. The accomplished workload of two military treatment facilities, Martin Army Community Hospital located at Fort Benning, Georgia, and the United States Air Force Regional Hospital located at Eglin Air Force Base in Florida, was compared with each other and with the outpatient visit workload standards of a civilian treatment facility. The civilian staff model health maintenance

organization (HMO), Kaiser Permanente, Atlanta, Georgia, location was chosen for the comparison. Control of extraneous variables in experimental design was achieved by utilizing workload performed under similar conditions (staff model HMO, similar patient base, and similar patient acuity). All three of the organizations are located in the southeast region of the United States. Both of the military treatment facilities are medium size (140-200 operating beds), acute care hospitals located in areas considered to be popular military retirement communities. Both of the military treatment facilities have family practice residency teaching programs and use first, second, and third year residents, as well as staff physicians, to provide treatment in their family practice clinics. Primary care treatment was chosen for comparison, to include family practice, internal medicine, pediatrics, and obstetrics and gynecology. Workload data and number of providers for the military treatment facilities were obtained from the Defense Management Information System (DMIS), which utilizes the Military Expense Performance Reporting System (MEPRS). This

data was further verified by contacting the Resource Management Division of each hospital. Workload data for Kaiser Permanente was obtained by telephonic interview with the Chief of the Operations Department in Atlanta, Georgia. The Joint Healthcare Manpower Standards (JHMS), were also used as a standard for comparison.

A written survey was used to obtain responses for measurement of the perceived value of certain nonmonetary incentives in stimulating increased productivity. The population for the survey was all military physicians working at Martin Army Community Hospital (total = 120 physicians). The survey was sent to all physicians in the population in order to obtain an accurate estimation and to account for random control (82 responses were received, giving a 95% confidence interval). A Likert Scale, grounded and charged (0,+3,-3), was used to measure responses to 17 questions concerning possible productivity motivators. Data from the survey was tabulated by survey instrument number, and no names or identification system were employed, thus protecting the personal privacy of

survey participants. Prior to finalizing the survey questions, a pilot survey instrument was developed and the pilot survey conducted. Feedback from the pilot survey was tabulated, and the survey instrument was subsequently modified to improve face validity. Statistical analysis of the survey included correlation of demographic data to response in order to stratify the responses for possible implementation, and a frequency distribution in order to determine the perceived relative value of the incentives.

RESULTS AND DISCUSSION

As shown in Table 1, the private sector organization, Kaiser Permanente, expects its staff physicians to accomplish a greater number of patient visits per month than the Department of Defense. The workload standard for Kaiser's HMO staff physicians in each category is greater than the Joint Health Care Manpower Standard (DOD 13.2-STD). It should be noted, however, that Kaiser Permanente (Atlanta Operations Office) would not comment or provide actual accomplished workload data for comparison of accomplished workload to their workload standards.

Workload Standards Comparison

Table 1. Workload Standards in Visits Per Month

<u>Organization</u>	<u>Fam Pr</u>	<u>IM</u>	<u>OB/GYN</u>	<u>PEDS</u>
DOD	445	251	324	410
Kaiser	*480	*480	320-400	480-560

*Kaiser combines family practice and internal medicine into a category entitled "general mix."

*Fam Pr= Family Practice, IM= Internal Medicine,
OB/GYN= Obstetrics and Gynecology, PEDS= Pediatrics

**Workload Comparison of an Army Hospital
to an Air Force Hospital**

Accomplished workload for Martin Army Community Hospital and United States Air Force Regional Hospital, Eglin is displayed in Tables 2, 3, 4, and 5 below. This data is for the first quarter of fiscal year 1992 (October, November, and December of calendar year 1991). A figure of 20 working days per month was used to calculate the average visits per provider per month and the average visits per provider per day. It should be noted that nurse practitioners, nurse midwives, and military "partners" full time equivalents were counted as providers in the obstetrics/gynecology (OB/GYN)

clinics, and "partners" were also counted as providers in the internal medicine clinics. The results indicate that the Air Force hospital is more productive (using a provider as the measure of input, and an outpatient visit as a measure of output) in their internal medicine clinic and their OB/GYN clinic. The Army hospital used seven physicians and one nurse practitioner in the OB/GYN clinic, while the Air Force hospital used four physicians, two nurse midwives, and two nurse practitioners. The Air Force staffing ratio is a less costly mix of providers, and further enhances their productivity. The Army pediatric clinic displayed significantly higher productivity. The productivity was approximately equal in family practice clinics. When the number of visits per provider per month for both the Army hospital and the Air Force hospital is compared to the DOD standard, the standard is met only in three out of eight instances. This discrepancy brings into question the validity of the DOD Standard.

Physician Productivity

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Table 2. Family Practice Clinic Productivity

	<u>Providers</u>	<u># Visits</u>	<u>/Prov/Mo</u>	<u>/Prov/day</u>
MACH	51	23430	153	8
EAFH	23	11261	161	8

Table 3. Obstetrics/Gynecology Clinic Productivity

	<u>Providers</u>	<u># Visits</u>	<u>/Prov/Mo</u>	<u>/Prov/day</u>
MACH	8	6174	257	13
EAFH	8	6906	288	14

Table 4. Pediatric Clinic Productivity

	<u>Providers</u>	<u># Visits</u>	<u>/Prov/Mo</u>	<u>/Prov/day</u>
MACH	4	6723	560	28
EAFH	8	9957	415	21

Table 5. Internal Medicine Clinic Productivity

	<u>Providers</u>	<u># Visits</u>	<u>/Prov/Mo</u>	<u>/Prov/day</u>
MACH	7	4348	207	10
EAFH	8	6023	251	13

Table 6 below exhibits the results of the productivity motivation survey. The results are ranked in descending order, with the value of the cumulative response of each listed.

Survey Results--Possible Productivity Incentives

Table 6. Productivity Motivation Survey Results

<u>Motivator</u>	<u>Value</u>
1. An additional nurse	183
2. An additional secretary	156
3. Additional money for trips	144
4. Additional money for Education	140
5. Priority for ancillary tests	106
6. Part time transcriptionist	104
7. Posting records only administrative duty	104
8. 1/2 day free off-time per week	96
9. A piece of new equipment	96
10. A personal computer for office	84
11. No On-call duty	59
12. Pay to moonlight in ER	56
13. Three days on and two off	21
14. A leadership position	14
15. Private parking spot	8
16. An influential committee spot	-24
17. A plaque recognizing your clinic	-44

From this analysis, it can be concluded that in Martin Army Community Hospital the military physicians

consider additional ancillary support as the primary variable in motivating them to increase productivity. Following ancillary support is a chance to have "leading edge" knowledge and equipment, more control of their time while on and off duty, and finally, more recognition. The hospital commander can now prioritize resource allocations to stimulate productivity more effectively.

Some interesting results were obtained by correlation analysis of cumulative response to each variable. The critical value (for a 2-tail test, with significance at the .05 level) of $\pm .21705$ indicated a high positive or negative correlation. Physicians with the military rank of captain or below desired priority for their ancillary testing. This correlation could mean that these younger physicians were more concerned with laboratory results for confidence in their diagnoses. Female respondents showed high correlation with both a free afternoon off and with the "no on-call duty" variables. This correlation could be due to the female physicians having other home responsibilities, such as school, children, or babies.

Those respondents that desired a leadership position also wanted an influential committee spot, private parking, and a recognition plaque for their clinic. Those physicians that wanted more travel funding and more continuing medical education also wanted new equipment for their clinic, and could be classified as those who desire to be on the "leading edge" of medicine. All of these considerations could be used by the hospital commander in allocating his resources most effectively.

Implications of the Results

The higher per physician workload obtained by the Air Force Regional Hospital at Eglin in two clinics could easily be due to the amount of emphasis management places on productivity, or due to a more productive "mix" of physicians and support personnel. Another reason could be that of "higher expectations" placed upon physicians to produce; however, neither the Army or Air Force hospitals met the DOD standard for workload productivity. This DOD standard may also be one that is unreasonable for military providers,

considering other administrative and readiness requirements placed upon them.

If military hospitals are to obtain more productivity, then productivity must become an item of great management interest. Certainly, productivity can be used as a measure of the effectiveness of management; however, few clinic managers were even aware of the amount of outpatient visits they had produced, or of the requirement of the DOD standard. Once these managers know what their production has been, they can set an internal goal using their own standards, or they can use an outside standard, such as the DOD standard. No matter which method is used, goal setting for improvement is required.

The varied responses obtained from the productivity survey clearly show that different groups of providers are motivated by different incentives. Managers should use the results of this survey and also talk to their providers to find out what they desire. The first step in allocation of scarce resources is to study the "target audience" in order to gain the most productivity for each resource dollar.

Finally, there must be a very clear link between productivity and reward. This link must be highly visible and highly dependable in the provider's eye. The organization that establishes this type of corporate culture sets the stage for increased productivity and gives the provider a personal stake in being productive.

Weaknesses of the Study

The major weakness of this study was the unavailability of workload data from Kaiser Permanente Health Maintenance Organization in Atlanta, as some productivity motivators may have been gained from it. Although the sample size for the survey conducted at Martin Army Community Hospital was large, it would have been more meaningful to administer the survey to both the Army and Air Force physicians. Future studies of productivity in military health care organizations should survey both organizations to gain possible reasons for the difference in productivity of the two organizations.

The other major weakness of the study was the use of the Medical Expense Performance Report (MEPRS)

database for workload calculation. This database has drawn criticism throughout the Army Medical Department, due to inaccuracy. Different providers and different clinics show great discrepancies in reporting methods.

CONCLUSIONS AND RECOMMENDATIONS

Conclusions

The purpose of this study was to compare reported workloads and standards of an Army, Air Force, and civilian health care institution providing health care in similar managed care environments. Additionally, the purpose of the study was to recommend methods to improve productivity of military physicians in a managed care environment. As a result of that comparison and survey, the study concludes the following:

1. Many clinics of both Army and Air Force hospitals fail to meet the Joint Health Care Manpower Staffing Standards for productivity.
2. There are ongoing problems with the reporting of workload data into the MEPRS database.

3. Age, sex, rank, and specialty affect the amount of productivity that any one incentive can provide.

4. Productivity is not yet a priority in military hospitals. If health care managers intend to survive in an environment where resources are linked to productivity, this situation must change.

Recommendations

The foremost recommendation of this study is for management to make productivity a high priority. Productivity planning and goals should be included in the organization's strategic plan. A well planned and executed program must begin with management changing the corporate culture. A support system that can withstand the increased workload must be in place. It is recommended that hospital commanders challenge their managers to increase productivity and to include the consideration of productivity in the provider's annual performance rating. It is also recommended that clinic managers review and be aware of their past and present productivity. They must set goals for improvement within their own clinics and monitor

performance against those goals. Finally, the link between productivity and reward must be clearly established and each individual given a stake in the productivity of their clinic. An incentive system that actually provides the rewards mentioned in the productivity survey should be established and published.

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